

Remarks

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

On April 12, 2005, applicants submitted an Information Disclosure Statement (based on PTO form 1449) (“IDS”) citing 60 references. As an attachment to the pending Office Action (mailed July 25, 2006), the Examiner included an initialed and signed copy of the IDS. However, it appears that the foreign patent documents (i.e., Reference Cite Nos. 16-24) were *not* initialed by the Examiner. Applicants assert that these foreign patent documents were, indeed, filed along with the IDS. Further, there is no mention of any deficiencies regarding these foreign patent documents in the Office Action. Thus, applicants respectfully request that the Examiner consider the foreign patent documents cited on the IDS, and return the initialed/signed copy of the IDS to applicants with the Examiner’s next communication.

Claims 1-31, 35-37, 39-42, and 54-92 have been canceled without prejudice as being directed to non-elected subject matter. Claims 32, 38, and 43-47 have been amended. No new matter has been added by way of these amendments. Claims 32-34, 38, and 43-53 are now currently pending.

The objection to claims 32-34, 43-47, and 49-53 as reciting non-elected subject matter is respectfully traversed in view of the above amendments. In particular, claims 32, 38, and 43-47 have been amended to delete said non-elected subject matter. Support for these amendments is found in original claims 32, 38, and 43-48.

The rejection of claim 33 under 35 U.S.C. § 112 (2nd para.) for indefiniteness is respectfully traversed. Claim 33 recites that the “isolated mutant phytase is in pure or non-pure form.” The U.S. Patent and Trademark Office (“USPTO”) has taken the position that the terms “pure” and “non-pure” are relative terms that render claim 33 indefinite. Further, the USPTO asserts that “the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention” (Office Action, mailed July 25, 2006, at pages 3-4). Applicants respectfully disagree.

The specification expressly describes the meaning of the term “pure form” in relation to the protein or polypeptide of the mutant phytase of the present invention, as follows:

A purified protein or polypeptide of the mutant phytase of the present invention can be obtained by several methods. The purified protein or polypeptide of the mutant phytase of the present invention is preferably produced in *pure form* (preferably at least about 80%, more preferably 90%, pure) by conventional techniques well known in the art. Typically, the purified protein or polypeptide of the mutant phytase of the present invention is secreted into the growth medium of recombinant host cells. Alternatively, the purified protein or polypeptide of the mutant phytase of the present invention is produced but not secreted into growth medium. In such cases, to isolate the protein or polypeptide of the mutant phytase, the host cell carrying a recombinant plasmid is propagated, lysed by sonication, heat, or chemical treatment, and the homogenate is centrifuged to remove cell debris. The supernatant is then subjected to sequential ammonium sulfate precipitation. The fraction containing the protein or polypeptide of the mutant phytase of the present invention is subjected to gel filtration in an appropriately sized dextran or polyacrylamide column to separate the proteins. If necessary, the protein fraction (containing the mutant phytase of the present invention) may be further purified by HPLC.

(Specification, at page 30, lines 1-17) (emphasis added).

Protein purification is a conventional technique in the fields of molecular biology and protein science. Based on the teachings in the specification (e.g., as recited above) and the knowledge in the relevant art, one of ordinary skill would readily understand the meaning of the terms “pure” and “non-pure” and the scope of the invention of claim 33.

For these reasons, applicants respectfully submit that the rejection of claim 33 for indefiniteness is improper and should be withdrawn.

The rejection of claims 32-34, 38, and 43-53 under 35 U.S.C. § 112 (1st para.) for lack of an adequate written description is respectfully traversed in view of the above amendments and the following remarks.

The USPTO has characterized the rejected claims as being directed to a genus of modified phytases having at least one mutation (i.e., a substitution at a residue equivalent to residue 50, 91, 94, 228, 262, 300, or 301 of SEQ ID NO:2) and having an amino acid sequence that has 96% sequence identity to any 100 amino acid portion of SEQ ID NO:2. The USPTO has asserted that the specification fails to adequately describe this genus, because the specification fails to disclose a representative number species of the claimed

mutant phytase. Applicants assert that this ground of rejection has been obviated by amending the claims to delete the non-elected subject matter, and by amending claim 32 to delete the phrase “over a region of at least 100 amino acid residues.”

For the above reasons, applicants respectfully submit that the rejection of claims 32-34, 38, and 43-53 for lack of an adequate written description is improper and should be withdrawn.

The rejection of claims 32-34, 38, and 43-53 under 35 U.S.C. § 112 (1st para.) for lack of enablement is respectfully traversed in view of the above amendments and the following remarks.

The USPTO has acknowledged that the specification is enabling for a modified phytase (or foodstuff containing the modified phytase) having at least 95% homology to SEQ ID NO:2 and having one or more substitution at an amino acid residue equivalent to residue 50, 91, 94, 228, 262, 300, or 301 of SEQ ID NO:2. However, the USPTO asserts that the specification does not enable a modified phytase having only 96% sequence identity to any 100 amino acid residue portion of SEQ ID NO:2. In addition to the claim amendments described above, independent claim 32 has also been amended to positively recite that the mutant phytase has “phytase activity.” In view of these claim amendments, applicants respectfully submit that the lack of enablement rejection is no longer proper.

For the reasons discussed above, applicants respectfully submit that the rejection of claims 32-34, 38, and 43-53 for lack of enablement is improper and should be withdrawn.

The rejection of claims 32-34, 43, 45, 47, and 49-53 under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 6,599,735 to Bartók et al. (“Bartók”) in view of U.S. Patent No. 6,475,762 to Stafford et al. (“Stafford”) is respectfully traversed in view of the above amendments and the following remarks.

Bartók is cited as teaching a mutant phytase from *Aspergillus niger*, where amino acid residues in the substrate binding region (i.e., Q50, K91, K94) are mutated to achieve higher thermostability and lower pH enzyme activity in the mutant phytase. Stafford is cited as teaching a phytase from *Aspergillus niger* having an amino acid sequence that has 100% sequence identity to SEQ ID NO:2 of the present application. Stafford is also cited as teaching the use of the phytase as an animal feed composition. In view of the cited references, the USPTO asserts that it would have been obvious to one of ordinary skill in the art to insert substitutions at residues Q50, K91, and/or K94 of the *Aspergillus niger* phytase

of SEQ ID NO:2 to produce a mutant phytase having increased thermostability and a lower pH enzyme activity. The elected claims require a substitution at residue 228 of SEQ ID NO:2. However, nowhere does Bartók or Stafford teach this substitution. Therefore, applicants assert that the amendments to the claims are sufficient to overcome this rejection.

For the reasons above, the rejection of claims 32-34, 43, 45, 47, and 49-53 is improper and should be withdrawn.

In view of all of the foregoing, applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

/Andrew K. Gonsalves/

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Andrew K. Gonsalves
Registration No. 48,145

NIXON PEABODY LLP
Clinton Square, P.O. Box 31051
Rochester, New York 14603-1051
Telephone: (585) 263-1658
Facsimile: (585) 263-1600